

ERECTILE DYSFUNCTION AFTER COLORECTAL SURGERY

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Abstract

Sexual dysfunction following surgery for rectal cancer may be frequent and often severe. The aim of the present study is to evaluate the postoperative incidence of this complication and its severity. The current study is a retrospective study in which consecutive patients with rectal tumors, regardless of location (upper, middle or lower) were enrolled during a 1 year period in the General Surgery Clinic of the Emergency Clinical Hospital Prof. Dr. Agrippa Ionescu, Hospital, Bucharest. The patient files, paraclinical investigations, operative protocols and histopathological bulletins were reviewed and data regarding age, gender, date of diagnosis, medical treatment administered including neoadjuvant therapy and reinterventions were collected. The IIEF-5 type questionnaires were used to assess sexual function at 6 months. We identified a number of 30 patients with a median age of 60 years. All the patients were operated via open approach. Total mesorectal resection (TME) was practiced in 18 cases. Mean period follow-up was 10 months. Perioperative mortality was 0. There was no recurrence 1 year after surgery. Ten patients benefited from neoadjuvant radiotherapy. Rate of erectile dysfunction was 80%. Rate of ejaculation dysfunction was 70%. Patients operated for rectal cancer via open approach showed severe sexual dysfunctions (SD). These complications affect the patient's quality of life and needs a multidisiplinary approach towards a better understanding of this problem by both the medical staff and the patient.

Keywords: *erectile dysfunction, rectal cancer, surgery*

Introduction

Sexual dysfunction (SD) is one of the most common long-term complications of the treatment for rectal cancer, however, studies consistently indicate that this problem is bypassed and rarely discussed with patients during the follow-up period [1]. It has been estimated that over one million patients are diagnosed annually with colorectal cancer (CRC), along with 500,000 deaths worldwide [2, 3]. Mortality and morbidity in CRC have increased in recent years, and has become the third most common type of malignancy and the

fourth most common cause of cancer mortality worldwide [4, 5].

Low tumor location increases the surgical difficulty while early age and long life expectancy raises the issue of conserving the sexual functions which play a important role in the quality of life. Severe SD secondary to autonomic nerve injury in middle and lower rectal cancers are a frequent complication of surgical interventions. Survival in CRC has increased significantly in recent years due to advances in the surgical techniques used and adjuvant / neoadjuvant therapy, and most patients will become long-term survivors [6].

These increased rates have changed the medical interest from treating the malignancy to improving the quality of life in the long term, and an important role in this aspect is the quality of sexual intercourse [7]. The way patients experience erectile dysfunction (ED) can be positively influenced by the medical information and it's quality.

At present, there are calls for the medical staff to give more importance to other non oncological complications for survivors of CRC such as ED and change in sexual activity [8]. ED is defined as the inability to achieve or maintain a firm erection sufficient to have sexual intercourse; this differs from infertility, which is the inability to conceive a child. In addition, depressive feelings about having cancer can affect sexuality, causing a series of signs and symptoms that can lead to ED [9]. Chemotherapy, hormone therapy, surgery, and radiation can also cause sexual side effects. Additional factors that play a role include the age of the patient and the degree of SD before starting treatment[10].

Studies report that as many as 63% of men will have ED, and that 60% will have difficulty with ejaculation after treatment for RC [11, 12]. Mannaerts and colleagues reported in a recent study that of 73 men who received radiotherapy and surgical treatment for rectal cancer, only 10% reported that they could achieve a "quality erection" and only 10% could ejaculate postoperatively [13].

Our study is focused on identifying the incidence of SD after open colorectal resections in our clinic and the factors that can influence it, such as: size of the tumor, location, emergency vs. elective

Materials and method

The current study is a retrospective study in which consecutive patients with rectal tumors, regardless of location (upper, middle or lower) were enrolled operated during a 1 year period in the General Surgery Clinic of the Emergency Clinical Hospital Prof. Dr. Agrippa Ionescu, Hospital, Bucharest, Romania. Inclusion criteria consisted in the diagnosis of rectal cancer and at least one surgical intervention. Patients treated with the help of laparoscopy were not included.

Patient files, paraclinical investigations, operative protocols, erectile dysfunction was evaluated at 6 months with the help of the IIEF-5 (The International Index of Erectile Function) questionnaire and histopathological bulletins were reviewed and centralized in a microsoft excel. Informed consent was obtained from the patients.

Statistical analysis was done with IBM SPSS V20.0

Results

We identified a number of 30 patients operated for CRC (Table 1). The median age of the group was 60 years with a standard deviation of 12,3 years.

Median follow-up was 10 months. All of the patients were operated via open approach. Distribution of the tumors in the rectum varied: 14 upper rectum, 10 middle and 6 in the lower rectum. Emergency surgery was practiced in 8 cases mainly due to intestinal obstruction. All of the patients benefited from preoperative urinary folley catheter which was extracted on postoperative day 2 .

Variable	No.
Age (median)	60
Tumor stage	
T1	5
T2	14
T3	7
T4	4
Preoperative radiotherapy	
Yes	6
No	24
Tumor location	
Upper	13
Middle	10
Low	6
Type of resection	
Low anterior resection	20
Hartmann	6
Abdominoperineal resection	4
Anastomosis leak	3

Table 1 - Patient characteristics

Six patients benefited from neoadjuvant therapy. There were 3 cases of anastomosis fistula, all in the cases of low rectal tumors.

Median hospital stay was 6 days with a standard deviation of 1,2 days. At 1 year follow-up no recurrence was identified.

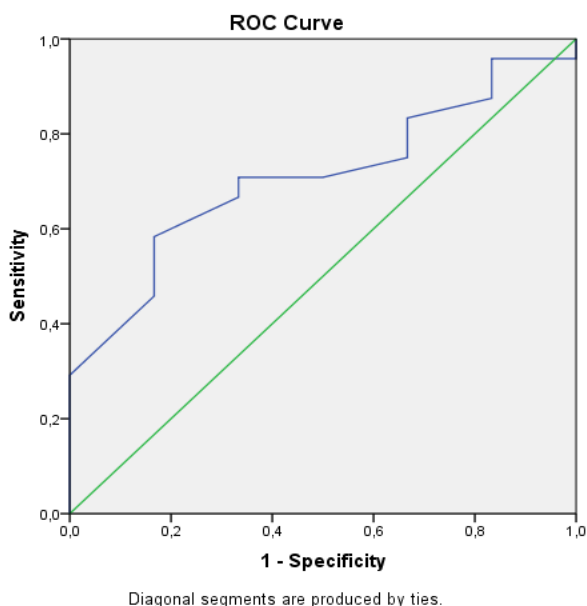


Figure 1 ROC curve for sensibility and specificity of IIEF-5 score in patients with upper vs. lower rectal cancer

When comparing patients with upper rectal tumors to patients with low rectal tumors and taking into account the IIEF-5 score we observed that 70% of the patients with low rectal tumors have moderate to severe ED (IIEF-5 score = 5-11). Area Under the Curve (AUC) was 0.708 (Figure 1). 95% CI 0.5-0; P = .01

Discussion

The treatment protocol for prostate cancer always involves informing the patient of ED and has become a preoperative routine discussion, including subsequent therapeutic options to alleviate this problem. For patients with CRC undergoing surgery, routine patient information on postoperative sexual disorders and the available therapeutic resources are not available. All this is secondary to either a lack of efficacy of the treatments available or to a lack of knowledge of the medical staff involved in the treating process [14]. ED can affect a large number of patients, Nishizawa Y. on a group of 49 patients with CRC undergoing intervention that involved TME (total mesorectal resection) noticed that erection was affected in 80% of the

cases while 82% suffered ED. Damage to the superior hypogastric plexus and hypogastric nerves could lead to ED [15]. A well known surgical risk factor for SD is abdominoperineal resection, especially with respect to erectile dysfunction in male patients [16]. Avulsion of the pelvic splanchnic nerves from their sacral roots might occur following a tear of the presacral parietal fascia during the perineal phase of this procedure [17,18]. Among the risk factors implicated in the increase in incidence of postoperative SD are: age, blood loss, anastomosis fistula, preoperative radiotherapy, and low rectal resections [19]. Our results regarding the relation between tumor location and ED (low tumor have a higher rate of ED) were in accordance with the literature. Hendren et al. in his study of 99 patients with rectal tumors in which he used a nerve sparing technique in order to preserve sexual function, 50% of them were sexually active as a result of surgery compared to 91% preoperatively, 45% reported that sex life was poorer after surgery while 47% reported loss of libido [20]. TME involves routine dissection of the mesorectum, which includes the lymph nodes and the perirectal fibrous tissue that contains the autonomic pelvic nerves [21]. All these steps lead to an increased risk of nerve damage and consequently SD. The most common cause of this complication is related to the lack of awareness of the pelvis anatomy and aggressive local dissection [22]. Celentano et al. demonstrated that avoidance of macroscopic lesion to pelvic nerves when one uses a nerve sparing technique allows the preservation of erectile function [23]. Unfortunately, this desideratum cannot always be achieved while maintaining oncologic free margins of resection.

Taking into account the above regarding macroscopic nerve sparing, the United States and the European Union have different views on the preservation of genital function in the case of rectal cancer surgery [24]. In the the United States it is recommended that routine preservation of the pelvic autonomic nerves when one does a TME resection, while the European Union countries prefer extended lateral pelvic dissection and resection of the lymphatic nodules [24]. The nerve sparing techniques may reduce the rate of postoperative SD but only in selected cases [24]. In advanced

rectal tumors with lymphatic invasion – N1 the curative rate of this surgical intervention is still under debate. In our clinic, when it is possible and the size of the tumor as well as the TNM stage permits without jeopardizing the long term oncological results we employ the nerve sparing technique and do the TME with sharp dissection while limiting our lymphatic dissection on the lateral pelvic walls only when adenopathies are not identified on the preoperative pelvic MRI.

Regarding the use of laparoscopy in the surgical treatment of rectal tumors to prevent nerve lesions due to the increased field of view, Quah et al. reported an important difference in SD in his study, in which two groups of patients were compared – one operated via laparoscopy and the other via an open technique [25]. The interesting result is that the group operated via the open technique seemed to fare better regarding SD. However, the results are contradictory and perhaps the role of the surgeon through his experience is definitory in the prevention of these complications. McGlone et al. on a group of patients operated in a specialized laparoscopy center identified a net difference in sexual function in the case of a group of patients operated by the minimally invasive approach compared to the open one [26]. As previously indicated by Stephens and colleagues, radiotherapy has less effect on SD than surgery [27]. Adjuvant radiotherapy for rectal cancer is associated with a 1.8 - fold increased risk of developing SD in men who undergo surgery for rectal cancer [28]. The cause of radiotherapy - related SD is multifactorial, involving fibrosis, vascular toxicity, neurotoxicity and psychological factors [29]. Radiation damage to the cavernous arteries may result in impotence and the seminal vesicles may stop functioning after irradiation, resulting in ejaculatory problems [30]. We did not find an independent correlation between radiotherapy and postoperative SD. This could have been linked to the early gathering of patient data [29,30].

However SD after rectal cancer treatment is a multidimensional problem. There are other factors in an oncologic patient related to his psyche that influence sexual desire besides the objective ones such as: survival anxiety, fear of stoma dysfunction and altered body image - all contribute to the reduced sexual desire and ED.

Despite the lack of conclusive evidence, it is recommended that patients be informed that surgery might affect sexual functioning [31]. In view of the above, SD is prevalent in rectal cancer survivors and is an important part of the quality of life that medical staff need to be aware to discuss. Indifferent of age, sexual orientation, marital status, sexual function is an important aspect of the quality of life (QOL) of all patients, and its assessment must be done routinely in all stages of treatment. A combination of clinical examination, anamnesis and questionnaires can improve this assessment and ease the patient's recruitment to a conversation he refrained to initiate and expose his fears [32]. However, quality of life is influenced by the ability to adapt to unfortunate conditions and it has been shown that it does not reflect poor functional outcome [33].

Even if patients do not report changes in sexual function after treatment is completed, it is important that they are evaluated as some signs may not be felt by the patient initially and can delay optimal treatment [34]. Healthcare providers in turn report a lack of knowledge of the therapeutic options that are outside their scope of work, thus limiting the ability to carry out these conversations. In a multidisciplinary team, there is the possibility to consult a person experienced in treating these SD's. If this option is not available, the patient should be territorially dispensed to a healthcare provider who can help. We routinely discuss with our urologist the problems the patient might encounter in the postoperative period and when they return for reevaluation we also conduct an interdisciplinary consultation with the urologist. Although there are multiple forms of treatment (medication, penile injections, vacuum devices) effective for SD, data indicate that the vast majority of men (50-80%) do not use them and only 38% have found them effective in improving the sexual life. So understanding attitudes and behaviors regarding sexual behavior and treatments available is essential for their efficacy [35].

Conclusion

In conclusion, survival is the main concern during and after treatment of a colorectal

neoplasm, but as cancer fears and mortality decrease, sexual function often reappears as a significant concern. Patients with post-treatment sexual dysfunction have the potential to significantly improve sexual function, and benefit from a wide range of treatment options; but this information needs to reach the patient, from the doctor who needs to engage them in these discussions. There are a number of factors that can be identified preoperatively that could provide information on the extent of ED such as tumor location or local extension.

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